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TOWN OF ROCKLAND

MUNICIPAL SERVICES SURVEY

- 1975 -

PREPARED BY:

THE MUNICIPAL AND PRIVATE ABATEMENT SECTION

SOUTHEASTERN REGION

ONTARIO MINISTRY OF THE ENVIRONMENT



Ontario

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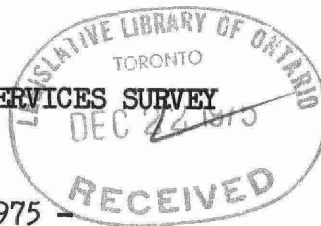
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A. INTRODUCTION

Staff from the Municipal and Private Abatement Section of the Southeastern Ontario regional offices of the Ministry of the Environment completed a municipal servicing study of the Town of Rockland during the months of June and July, 1975. The municipality was visited on June 2nd, 3rd, 16th, and 17th for the purpose of collecting data on the municipal services, interviewing municipal personnel responsible for administering the services, and collecting water samples to establish the quality of land drainage within the municipal boundaries. The specific municipal services reviewed were the water treatment plant, the sewage treatment facilities, land drainage works and the solid waste management program. In addition, any other significant matters relating to the environment were noted. A good deal of the information contained in this report is from our files and is consolidated here in order to present a complete summary of servicing adequacy and environmental concerns.

The objectives of the study and report are as follows:

1. To provide the municipality with an overall review of the status and adequacy of its municipal services,
2. To outline those areas in which the level of municipal servicing is inadequate or requires improvement,
3. To point out and evaluate matters within the municipality related to the environment and within this Ministry's jurisdictional responsibility.

The following people provided information and assistance towards the completion of the study and we wish to gratefully acknowledge their contribution:

1. Mrs. M. St. Louis, Municipal Clerk-Treasurer
2. Mr. Y. Lacroix, Assistant Municipal Clerk-Treasurer

3. Mr. J. Laviolette, Municipal Superintendent of Works
4. Mr. R. Rochon, Commissioner on the Rockland Public
Utilities Commission (PUC)
5. Mr. M. Rousseau, Superintendent of Works for PUC
6. Miss M. Maisonneuve, Secretary to PUC
7. Mr. R. Sarazin, McNeely Lecompte and Associates Ltd.
8. Mr. R. Lafrance, Public Health Inspector, St. Lawrence
and Ottawa Valleys Health Unit
9. Mr. H. Leroux, Utility Operations, Ministry of the
Environment, operator of the water and
sewage treatment plants.

B. LOCATION AND CHARACTERISTICS OF THE MUNICIPALITY

The Town of Rockland is located approximately twenty miles east of the City of Ottawa on highway 17. Its boundaries extend to the Ottawa River and include approximately three miles of riverfront. The Town is rectangularly shaped with most of the development along an east-west axis south of highway 17. It is bounded by the Township of Clarence, a predominantly agricultural municipality.

The Town has existed since at least 1868 when a fairly large sawmill was built on the present site of the Town. The population has fluctuated in direct relation to the activity of the sawmill until 1930 when the sawmill closed its operation at which time a significant decrease resulted. The trend since then has not been consistent but from 1960 to 1970, the population increase was approximately 14%.

There is little industrial activity in Rockland, though a fairly significant commercial sector operates on Laurier Street, the municipality's main street. This is not expected to change in the future and it is likely that the residential character of the municipality will be maintained. The municipal officials contacted were generally of the opinion that Rockland's proximity to the City of Ottawa will ensure a healthy growth rate. It appears that recently constructed homes in Rockland were readily marketed and several developers are actively pursuing plans for initiation or expansion of their development projects.

The residential character of the town means that the servicing requirements should be fairly uniform with no inordinately large water consumers or significant industrial users of the sewage system.

The topography and soil conditions of the Town are fairly unusual and have resulted in particular difficulties in servicing. There are several hilly areas of moderately gentle slopes as well as rather extensive marshy sites. The Town is on a large clay plain broken at irregular intervals by ridges and layers of sand, and its soil cover is highly variable. There are both areas of rock outcrop and areas of considerable soil depths, and both granite and limestone occurs fairly regularly. There are five major drainage channels within the municipality, all of which receive flows from numerous tributaries and storm sewers. The drainage channels all discharge into the Ottawa River either directly or via marshy areas located south of highway 17. The water quality in some of these marshy areas reflects the normal pollutional loads associated with urban runoff. As previously noted, the hilly and rocky areas have rendered sewage servicing difficult with the result that significant portions of the Town were left unserved even though treatment facilities were available.

C. POPULATION

The 1975 Ontario Municipal Directory indicates that last year's population in Rockland was 3,769, a figure corroborated by Mrs. M. St. Louis, the municipal clerk-treasurer. The population fluctuations in the past fifteen years are as shown in Table C.1.

TABLE C.1
Town of Rockland
POPULATION SINCE 1960

1960	3,012	1968	3,494
1961	3,037	1970	3,514
1962	3,263	1972	3,585
1963	3,475	1973	3,642
1965	3,487	1974	3,769
1966	3,513		

In a Master Plan of Development prepared by the municipal planning board in 1970, it was predicted that a population of 6,000 would be obtained by 1980. The trend since then suggests that this was somewhat optimistic. It is virtually impossible to attach a yearly percentage growth figure to Rockland as to do so would require that some conclusions be derived from the past decade's population and the figures don't lend themselves to that sort of interpretation. The municipal officials interviewed were of the opinion that growth over the next fifteen to twenty years wouldn't follow the pattern of the past years though there are no clear reasons which suggest this, except that the Regional Municipality has established a draft official plan which would see its population increase to 750,000 sometime between 1988 and 1994.

and 1,000,000 sometime between 1998 and 2015. The Regional planners could not determine the time at which these levels will be reached with any greater degree of certainty. In the past, Rockland's growth has not closely corresponded to growth in Ottawa but it is likely that as Ottawa expands, people will be more inclined to move towards the east as development areas in the southern and western parts of the Region will become somewhat restricted. Another factor is that people working in larger urban centres seem less hesitant to commute longer distances.

It appears to us that the twenty year population for Rockland will be in the range of 8,000 to 10,000, the first figure being somewhat conservative, the latter optimistic and based on the assumption that Rockland will be closely affected by growth in Ottawa-Carleton.

D. WATER TREATMENTDescription of Works

The water treatment plant consists of a Graver reactivator-coagulator-clarifier unit. The facilities are provincially-owned and operated and involve chemical addition, coagulation, and filtration. The plant capacity is 800,000 I.g.p.d. The operation and maintenance of the water distribution system is the responsibility of the Rockland Public Utilities Commission.

Water is pumped from the Ottawa River through two 8 inch diameter pipes extending approximately 110 feet into the river. Three low lift pumps rated at 200, 400 and 600 I.g.p.m. lift the water to the plant from a station situated at the river. The water is pumped into a Graver reactivator used for coagulation and sedimentation, with a detention time of 112 minutes and design flow rate of 550 I.g.p.m. The water is filtered in two Graver automatic filters with a design rate of 2.5 I.g.p.m./sq.ft. or 283 I.g.p.m. per filter. The filters are packed with 12 in. anthrafilt over 12 in. of 0.45 mm sand. There is a 48,000 I.g. clearwater storage tank and a 196,000 I.g. storage standpipe.

Flow Records

The plant has been in operation since the summer of 1972. The flow rates to-date are included in tables D.1 and D.2.

The yearly average flows have varied in the following way:

1972	-	0.46 mg.d.
1973	-	0.61 mg.d.
1974	-	0.55 mg.d.
1975	-	0.54 mg.d.

TABLE D.1

8.

TOWN OF ROCKLAND
 Water Treatment Plant
Water Consumption - 1972-73

<u>Month</u>	<u>Total (million gallons)</u>	<u>Average daily (million l.g.p.d.)</u>	<u>Maximum daily (million l.g.p.d.)</u>
September/1972	11.32	0.38	0.51
October	14.49	0.47	0.54
November	14.22	0.47	0.58
December	<u>15.09</u>	<u>0.49</u>	<u>0.58</u>
Annual	55.12	0.46	0.58
January/1973	17.11	0.52	0.63
February	17.37	0.62	0.65
March	18.24	0.59	0.64
April	15.49	0.52	0.69
May	19.69	0.63	0.68
June	20.05	0.67	0.75
July	23.01	0.74	0.90
August	22.79	0.73	0.88
September	20.08	0.67	0.87
October	19.55	0.63	0.74
November	16.33	0.54	0.58
December	<u>15.21</u>	<u>0.49</u>	<u>0.53</u>
Annual	224.92	0.61	0.90

TABLE D.2

9.

TOWN OF ROCKLAND
Water Treatment Plant
Water Consumption - 1974-75

<u>Month</u>	<u>Total (million gallons)</u>	<u>Average daily (million l.g.p.d.)</u>	<u>Maximum daily (million l.g.p.d.)</u>
January/1974	17.91	0.58	0.63
February	17.40	0.62	0.64
March	17.69	0.57	0.70
April	14.54	0.48	0.57
May	15.47	0.50	0.58
June	18.09	0.60	0.73
July	20.55	0.66	0.78
August	20.27	0.65	0.83
September	16.61	0.55	0.66
October	15.74	0.51	0.74
November	14.74	0.49	0.61
December	15.87	0.51	0.54
Annual	204.91	0.55	0.83
January/1975	16.37	0.53	0.67
February	14.48	0.52	0.56
March	14.76	0.48	0.52
April	14.07	0.47	0.54
May	18.08	0.58	0.78
June	19.05	0.64	0.93
Annual (to date)	96.81	0.54	0.93

There are no reasons for the sudden increase in 1973 and the following decreases in 1974 and 1975. The maximum daily flows have not varied significantly on a yearly basis and generally follow the expected seasonal fluctuations.

The PUC advised us that there are 700 connections in the Town, with 981 separate consumer bills. There are 26 connections which aren't being used, and it is anticipated that 12 new consumers will be added this year. The only major users are a car wash station and a nursing home. Without correcting for these two users, and assuming 3.5 persons per consumer bill, we can calculate a per capita consumption of 188.8 gallons per day in 1974, and 157.3 gallons per day in 1975. The usual figure is 75 g.p.c.d. and the higher flows reflect the inadequacies of the distribution system. These are discussed later.

It is also obvious that several factors cause the higher consumption figures in Rockland. For example, it was related to us that approximately 50 consumers keep the water faucets running continually in the winter to prevent freezing because of shallow service pipes. This would represent a very significant waste of water and these should be corrected in a systematic fashion, doing one part of the Town at a time. In some instances, it might be necessary to insulate the pipes. Another obvious problem is the indiscriminate usage of water being made in the Town. For instance, a recent investigation by our Utility Operations engineers revealed that lawn watering was being carried out at all times of the day, and in some instances over inordinately extended periods of time. There are apparently users which keep their hoses running overnight. Our survey personnel encouraged the PUC to institute a program of restricted lawn watering. Such programs are used in several area municipalities and represent the most sensible way of controlling

this factor. Otherwise, there will be days when the requirement will exceed the plant capacity of 800,000 gallons, as occurred on several occasions during June and July of this year.

It is noteworthy that the water consumption figures are quite larger than the sewage treatment flows. This confirms that a great deal of treated water is being utilized for non-domestic purposes.

The PUC is presently considering the installation of water meters at each connection. This might well be the most effective way of controlling the excessive water usages in the Town. There are already 250 meters installed but not in service. The costs of metering should be raised by fixed monthly charges rather than all at once as there usually results less consumer resistance this way. The important part of the metering program is really the setting of rates in the proportions which will encourage the conservation of water by consumers.

Chemical and Bacteriological Results

The chemical results of plant samples analyzed since 1973 are included in table D.3. These indicate that the treated water is consistently of excellent quality with respect to most of the parameters tested. The turbidity readings however are often above the Ministry objective of 1.0 unit. This may be a result of lime addition which is carried out at this plant for pH control as inferred by the association between high levels of turbidity in the treated water and the higher pH's.

The quality of the raw water is surprisingly variable over the course of each year. The iron concentrations vary with turbidity and reflect the influx of sediment during certain periods of the year. The colour and turbidity levels vary considerably but this is normal for the Ottawa River and

TABLE D.3

ROCKLAND WATER TREATMENT PLANT

Chemical Results

<u>Month</u>	<u>Hardness as CaCO₃</u>	<u>Alkalinity as CaCO₃</u>	<u>Iron as Fe</u>	<u>Chloride as Cl</u>	<u>pH at lab</u>	<u>Colour Hazen units</u>	<u>Turbidity Formazin units</u>	<u>Conductivity umhos/cm</u>	<u>Calcium</u>	<u>Total Solids</u>	<u>Nitrogen as N</u>		
											<u>Free</u>	<u>Total</u>	<u>Kjeldahl</u>
January/1973													
raw	52	37	0.50	5	7.6	40	3.2	-	-	-	0.07		0.30
treated	72	88	<0.05	8	10.3	<5	5.9	-	-	-	0.01		0.40
April													
raw	56	44	1.3	6	7.6	50	16	-	17	90	0.03		0.42
treated	68	20	<.05	11	6.6	<5	0.40	-	17	90	0.01		0.17
July													
raw	34	23	0.65	3	7.8	20	6.0	-	9	60	0.14		0.43
treated	56	25	0.05	6	7.8	<5	1.5	-	14	70	0.07		0.17
October													
raw	46	22	0.35	3	7.4	30	2.8	68	7	-	<.01		0.34
treated	52	4	<0.05	4	5.9	<5	1.2	85	8	-	<0.01		0.34
January/1974													
raw	46	32	0.35	<5	7.0	40	0.38	102	12	60	0.08		0.60
treated	70	36	<0.05	8	7.6	<5	2.7	164	21	100	0.01		0.22
April													
raw	60	44	1.1	5	7.4	30	16	138	17	85	<10		.40
treated	90	50	0.05	11	8.2	<5	2.0	202	30	127	<.10		.20
July													
raw	30	24	0.85	4	7.2	40	4.6	77	9	100	0.1		0.3
treated	52	24	0.05	9	8.5	5	0.58	130	19	130	0.1		0.1

12.

.....2

TABLE D.3

ROCKLAND WATER TREATMENT PLANT - Chemical Results (Page 2)

Month	Hardness as CaCO ₃	Alkalinity as CaCO ₃	Iron as Fe	Chloride as Cl	pH at lab	Colour Hazen units	Turbidity Formazin units	Conductivity umhos/cm	Calcium	Total Solids	Nitrogen as N	
											Free	Total Kjeldahl
October												
raw	8.4	18	0.60	5	7.0	30	6.1	66	32	60	0.1	0.3
treated	60	26	0.05	6	8.9	5	1.3	131	20	130	0.1	0.3
January/1975												
raw	50	26	0.35	10	7.1	40	5.6	99	13.2	140	<0.1	0.8
treated	84	34	0.10	13	7.8	<5	5.6	99	13.2	140	<0.1	<0.8
April												
raw	40	32	0.45	8	6.9	30	5.5	119	9.6	10	0.1	0.2
treated	64	48	<0.05	12	8.7	.10	11.0	184	19.0	60	<0.1	<0.5

has been observed at other municipal water works along the river.

The operators submit samples every three months regularly and are to be complimented for the organized manner in which they retain records. The frequency of sampling is judged to be quite sufficient at these works.

The operators submit samples for bacteriological analysis on a weekly basis. Samples of raw water are collected, as well as three or four from throughout the system. The records since 1973 were reviewed. There were no bacterial counts detected in 91 out of 93 samples submitted. The two unfavourable readings were fairly low and upon immediate resampling, the results were found to be satisfactory. In addition to this program, the St. Lawrence and Ottawa Valleys Health Unit sample each month throughout the distribution system. Their results have also been uniformly satisfactory.

Distribution System

The present distribution system consists of a variety of plastic and steel pipes sized between 2 and 8 inches, supplied by a 10 inch feeder main. As a result of various piecemeal repair and extension projects, some sections are sized inconsistently with small diameter pipe intercepting larger pipe. Some sections of town experience lowered pressure and occasionally turbid water. There are reportedly several breaks each year and it is obvious that fairly major sections of the existing system will need replacing. In this regard, the consultant engineering firm McNeely, Lecompte and Associates Ltd. has recently completed a report on the improvement necessary to the distribution system. As it is anticipated that the town will be without the improved works for a while, the PUC should attempt to minimize

adverse effects from the present system. In particular, we recommend that

- (a) - an adequate program of flushing mains be applied, such that all major lines will be cleaned out at least yearly. Where there are no closed loops, the lines should be flushed directly to waste. Foam swabs should be forced through all lines of diameter larger than 4 inches.
- (b) - adequate disinfection procedures be completed wherever main breaks occur. The excavation should be treated with liberal quantities of hypochlorite to reduce the danger of bacterial contamination. The interior of pipes and fittings being installed should be swabbed with a 5 per cent hypochlorite solution before installation. The pipes should be thoroughly flushed, preferably from both sides if valving and hydrant locations permit. The section of main where the break occurred should be isolated, all service connections shut off and the section flushed and chlorinated to provide a contact period of 24 hours with a chlorine solution having a starting strength of 50 ppm. This dosage may be increased to provide for a proportionately shorter contact time. Special protective clothing should be used if chlorine solution of higher concentrations are used. The pipes should be flushed after chlorination and samples collected from the main for bacteriological analysis.

It is extremely important that these precautions be followed in the instances of main breaks because of the high incidence of water pollution in

the surface ditches draining the municipality. The levels of bacterial contamination throughout the Town were found to be excessive and any watermain exposure to the soil should be regarded as extremely hazardous.

The Cornwall district office of the Ministry should be contacted by phone immediately when a break occurs so that an environmental officer may supervise the disinfection process.

- (c) - a leak detection program be instituted either through a properly qualified engineering firm or through the municipality's own staff. It is essential that a complete inventory of the distribution system be carried out, particularly these sections which are not scheduled for replacement when the remainder of the town becomes serviced. As previously indicated, the per capita water consumption in Rockland is quite high. One very likely cause is leaking mains resulting from predominant unstable soils and rock excavations.
- (d) - a program of hydrant service be initiated over the next two years. All valves, the degree of corrosion, and all major components should be checked. There are private firms which are equipped to carry out these programs on a contract basis though in all probability, PUC staff could be trained to carry out this work.

We have also been informed that the interior of the standpipe used for water storage was painted last year but that the paint is peeling and getting into the distribution system. This could be serious and should be corrected as soon as possible.

Unserviced Areas

There are not many developed areas in Rockland which aren't serviced by municipal water. One such area is north of highway 17 approximately 2,000 feet west of the sewage lagoons where approximately 15 homes are on private services. The lot sizes are quite large and soil conditions appear generally favourable to septic tank disposal so that it wouldn't be likely that well contamination would occur here. Several residents in this area have had their water tested for bacteriological analysis with acceptable results. We do not recommend servicing of this area.

The western extremity of Laurier Avenue is not serviced though there are a few homes along this stretch. For similar reasons to those stated above, there is no need for extending the services in this direction.

Adequacy of Works

The 1975 flows to-date indicate that the plant is providing 69% of its design capacity, and that maximum daily demand occasionally exceeds the design. There have reportedly been several days in July where the flows have attained or exceeded one million gallons. The standpipe has a nominal capacity of 196,000 I. gallons but is located so close to the water plant that it couldn't be relied upon to provide equalization pressure in case of fire on any day where the plant's capacity is being exceeded. It is apparent that the treatment facilities should be increased unless a serious program of water conservation is undertaken. The storage capabilities at or near the plant should be preserved and bolstered by another elevated tank or standpipe located in the southern end of the system.

Recommendations

1. The deficiencies in the distribution system noted should be corrected in a systematic program designed over a period of years.
2. Lawn watering restrictions should be imposed to reduce the wastage of water.
3. The installation of water meters should be considered. A restructuring of the water rates should be effected to encourage water conservation.
4. A program of flushing mains should be initiated.
5. The procedure followed when mains break should be revised according to the specific recommendations in the report.
6. A program of hydrant service should be initiated.
7. The interior of the standpipe should be repainted as soon as possible.

E. SEWAGE TREATMENT

Description of Works

The existing sewage works consist of a sewer system, three pumping stations, and a 20 acre lagoon capable of serving an estimated 2,238 persons.

Flow Records

The sewage flows are measured at the Paul Street pumping station by totalling the hours of pumping. The flows from 1972 are summarized in table E.1. The total population served is estimated at 2,275. The per capita flow for 1974 was 100 gallons per day.

These flows are to be compared to the water flows in the preceding section. In 1974, the average daily consumption was 0.55 m.g.d., with a corresponding per capita consumption of 189 gallons per day. The water consumer population is approximately 3,430 and there are several areas of Town on water service but without sanitary sewers.

Chemical Results

The results obtained since 1972 are listed in table E.2. The 1975 results aren't complete so that the calculated removal efficiencies can't be viewed as typical. The degree of BOD and suspended solids removal has been consistently near the 85% mark. This is an exceptional degree of treatment for a sewage lagoon and is quite encouraging in that it indicates that Rockland sewage is suited to treatment by lagoons.

TABLE E .1TOWN OF ROCKLANDSewage Flows - 1972, 1973 and 1974. *

	<u>1972</u>	<u>1973</u>	<u>1974</u>
January	2.765 million gallons	7.891	7.318
February	2.566	6.606	6.244
March	2.801	11.182	9.695
April	2.684	8.860	12.553
May	2.738	9.086	10.285
June)	12.572 (combined)	7.688	6.713
July)		6.313	5.629
August	8.892	6.718	5.203
September	6.117	6.516	5.663
October	7.091	6.268	6.843
November	9.199	5.907	6.622
December	7.681	13.437	7.846
Actual total flows	80.835	82.386	82.952
Average daily flow	0.222 m.g.d.	0.226 m.g.d.	0.227 m.g.d.

* the monthly figures are approximate and are included for comparative purposes only; the total yearly flows are from the actual totalizer readings and represent the most accurate flow figures available.

TOWN OF ROCKLANDSewage Results - 1972 to date.

<u>Month</u>		<u>5 Day BOD</u>	<u>Total</u>	<u>Solids Suspended</u>	<u>Dissolved</u>	<u>Phosphorous Total Sol.</u>
July	raw	55		130		8.1
		48		140		11
	treated	11		20		3.2
		4.5		10		2.7
September	raw	55		140		5.0
	treated	3.5		10		2.6
October	raw	10		20		1.6
	treated	2.5		10		1.9
November	raw	40		70		5.0
	treated	3		5.0		1.5
December	raw	120		80		7.1
	treated	9.0		20		1.8
Annual	raw	54.7		96.7		6.3
	treated	5.6		12.5		2.3
% Removal		90%		87%		63.5%

Sample Results of Sewage - 1973

<u>Month</u>		<u>5 Day BOD</u>	<u>Total</u>	<u>Solids Suspended</u>	<u>Dissolved</u>	<u>Phosphorous Total Sol.</u>
January	raw	32		50		4.1
	treated	8		10		3.7
February	raw	13		45		2.0
		46		45		4.8
	treated	no sample				
March	raw	48		60		3.3
		50		55		4.3
	treated	14.0		15		4.9
April	raw	15		50		1.8
		26		100		2.7
	treated	11		10		2.2
May	raw	30		40		2.2
		46		45		4.7
	treated	no sample				
June	raw	70		120		4.2
		65		110		3.5
	treated	no sample				
July	raw	65		50		3.0
		42		40		3.2
	treated	no sample				
August	raw	16		30		2.8
		5.0		30		2.8
	treated	no sample				

TABLE E.2

TOWN OF ROCKLAND - Sewage Results (cont'd.) - Page 2

22.

<u>Month</u>		<u>5 Day</u>	<u>Total</u>	<u>Solids</u>		<u>Phosphorous</u>	
		<u>BOD</u>		<u>Suspended</u>	<u>Dissolved</u>	<u>Total</u>	<u>Sol.</u>
September	raw	N/A		30		3.2	
		N/A		40		2.5	
	treated	N/A		20		3.2	
October	raw	42	600	120		2.8	1.2
		60	470	130		3.2	2.5
	treated	9.0	35	10		1.8	0.70
November	raw	400	700	250		1.1	
		160	365	60		1.3	
	treated	10	330	10		1.4	
December	raw	120	500	135		4.2	
		65	450	50		3.2	
	treated	8.0	360	10		3.2	
Annual	raw	67.6	514	76.7		3.2	1.85
	treated	10.4	261.6	12.1		2.9	.70
% Removal		84.5%	49%	84.3%		9.3%	62%

Sample Results of Sewage - 1974

<u>Month</u>		<u>5 Day</u>	<u>Total</u>	<u>Solids</u>		<u>Phosphorous</u>	
		<u>BOD</u>		<u>Suspended</u>	<u>Dissolved</u>	<u>Total</u>	<u>Sol.</u>
January	raw	70	450	80		4.2	
		130	455	120		2.6	
	treated	no sample					
February	raw	80	540	160		3.4	
		42	380	30		2.5	
	treated	13	420	10		3.9	
March)							
April)							
May)	no samples						
June)							
July)							
August	raw	115	540	100		5.8	
		60	370	120		3.6	
		68	350	100		4.2	
		50	400	30		3.0	
	treated	13	425	<15		2.1	
September	raw	200	460	125		3.9	
		125	370	50		3.4	
		120	530	120		5.2	
		100	400	50		3.7	
	treated	20	400	30		4.0	
		26	400	40		2.1	
October	raw	145	320	90		4.6	
		70	270	80		3.3	
		175	470	230		4.2	
		65	350	50		1.8	
	treated	8.5	230	<15		1.9	
		5.0	350	<15		1.7	
November	raw	65	500	70		3.2	
		44	440	25		1.9	
		70	530	60		2.9	
		74	470	25		1.5	
	treated	10	400	<15		2.7	
		9.6	400	<15		2.0	

TABLE E.2

TOWN OF ROCKLAND - Sewage Results (cont'd.) - Page 3

23.

<u>Month</u>		<u>5 Day BOD</u>	<u>Total</u>	<u>Solids Suspended</u>	<u>Dissolved</u>	<u>Phosphorous Total Sol.</u>	
December	raw	100	595	135		3.9	
		36	435	40		1.9	
		N/A	400	50		1.6	
		N/A	400	35		1.6	
	treated	no sample					
Annual	raw	91.9	434.4	82.3		3.20	
	treated	13.1	378.0	19.3		2.55	
% Removal		85.7%	13%	76.5%		25.6%	

Sample Results of Sewage - 1975

<u>Month</u>		<u>5 Day BOD</u>	<u>Total</u>	<u>Solids Suspended</u>	<u>Dissolved</u>	<u>Phosphorous Total Sol.</u>	
January	raw	34	475	45		1.3	
		55	470	45		1.8	
		50	1025	70		1.6	
		30	410	35		1.2	
	treated	50	1025	70		1.6	
		30	410	35		1.2	
February	raw	75	390	65		2.5	
		60	385	45		.90	
		60	405	60		2.5	
		70	370	35		2.4	
	treated	no sample					
March	raw	130	525	65		4.0	
		65	460	40		3.9	
		N/A	605	35		1.6	
		40	495	20		1.7	
	treated	40	345	15		3.9	
		35	410	20		2.9	
April	raw	40	525	60		2.8	
		40	2090	40		2.5	
		15	475	25		1.4	
		19	475	20		1.1	
	treated	40	405	30		3.3	
		20	380	20		2.5	
Present	raw	52.2	599	44		2.10	
	treated	36.0	497	31.7		2.57	
% Removal		31%	17%	28%		Nil	

Unserviced Areas

There are significant portions of Town which are unserviced. There are no sanitary sewers north of highway 17. Woods Street and Avenue du Chateau were inspected and there were no indications of surface water pollution. The lots are generally of reasonable size, and while there is a lot of rock in this area, it appears that septic tanks can be made to work here. There is water servicing to this area so there is no danger of contaminated drinking water. Similarly, the area east of the unnamed bay, west of the sewage lagoons was also investigated and appeared satisfactorily served by septic tanks. The lots are large and adequately spaced apart. This area is fairly removed from the existing sewers and it wouldn't be worthwhile to put in sewers here. It seems fairly clear however that Edwards Street north of highway 17 and Catherine Street are both unsatisfactorily serviced. The water pollution survey (see later results) indicate a severe level of contamination. Either this area should be serviced or else serious attempts made immediately to correct septic tank deficiencies.

The area bounded by St. Jean Street, Laurier Avenue, Notre Dame, and highway 17 is unserviced. The problems between St. Jean and Paulette Street have been well documented. On the other hand, the problems west of Notre Dame, north of Laurier are not as clear, but from discussions held with various local residents, we can see a real need for servicing of this area.

Apart from this, there are not really any developed areas which aren't serviced by sewers where any need can be shown. In fact, as appears from the pollution survey, the most significant problem now is to get people to connect to the sewer where services are available. This can obviously best be achieved by municipal by-laws.

Adequacy of Works

In 1974, the average daily flow was 0.227 m.g.d. The BOD concentration in the raw sewage was 92 ppm., therefore the organic loading to the lagoon was 208.7 lbs per day, or 10.4 lbs per acre. For a seasonal retention lagoon, an accepted loading is 17 lbs/acre/day, so that the lagoon is underloaded from the organic point of view. This is evident in the good treatment efficiencies achieved as in the fact that odours are never a problem at this installation. It should nevertheless be remembered that the flows are probably low compared to the true value. From another point of view, the lagoon has a holding capacity of roughly 27 million gallons. In 1974, it received 83 million gallons. It is clear that there is not sufficient hydraulic capacity to meet the requirements for seasonal retention. In fact, the lagoon overflows quite regularly during the summer period.

It is presently proposed to extend the sanitary sewers under a Provincial project to essentially complete the servicing of the municipality. Under these circumstances, the treatment facilities should be expanded to meet the 20-year projected requirement. The present figures do indicate however that the facilities are not at a critical level and can serve effectively in the interim period until expansion is arranged.

Again based on the 1974 results, the waste loading on the Ottawa River would be in the order of 10,600 lbs BOD/year. This is actually principally discharged over a forty day period, leading to a daily loading of approximately 265.5 lbs BOD per day. This figure is for comparison's sake only and cannot be judged as accurate because there are so many variables involved, the rate of discharge being the main one. The 1971 Ottawa River Basin Report recommended limits of 60 lbs BOD per day but did not

establish the criteria to be followed where a daily loading figure was essentially inapplicable such as for a sewage treatment lagoon. The 1974 loadings if calculated on a daily basis amount to about 28 lbs per day. Rockland's permissible loadings to the Ottawa River are being re-evaluated.

Recommendations

1. The areas of Town which are unserved but where a demonstrable need for servicing has been shown should be given priority in the program to extend services.
2. The sewage treatment facilities should be expanded to meet the 20-year requirement. The design should be based on the highest economically feasible means of treatment, and not restricted to treatment methods which would necessarily meet the Ottawa River permissible loadings.

F. LAND DRAINAGE

The drainage system consists principally of open ditches, though some of the older areas of town are serviced by storm sewers. A lot of the undeveloped areas of town are inadequately drained; large marshes exist south of highway 17, north of the developed areas. The Town has expressed some desire to fill in these marshes to make them available as recreation land.

There is no planned maintenance program regarding the drainage system. Reportedly, there are no major difficulties with drainage in the Town.

The water samples collected during the water pollution survey indicated that surface run-off within the municipality carries a great deal of contaminating material. It is our opinion that most of this loading consists of sanitary sewerage and is not relatable to normal urban run-off, though the polluting characteristics of urban run-off have been well documented in recent years in several Ontario municipalities.

G. WASTE MANAGEMENT

Waste Collection

This is presently being carried out by a private contractor who collects once a week. Most of the wastes are from residences, though the contractor also collects from commercial establishments such as service stations, retail outlets, restaurants, and a nursing home. The contractor also conducts a spring and fall clean-up collection.

By-Laws

There are no municipal by-laws dealing with the management of wastes within Rockland. Such by-laws could be very useful in regulating the indiscriminate dumping of garbage throughout the municipality on non-occupied lots. The Town seems plagued by widespread citizen apathy to waste management. Garbage is deposited in ditches, left by roadsides, or allowed to accumulate on private property throughout. The main reason is that the Town hasn't yet got an acceptable waste disposal site for its citizens' use. Lack of accessibility to a suitable site has resulted in the usage of all sorts of contingency sites which are clearly unsatisfactory. For instance, the area of land located directly behind the Town hall has been used illegally for dumping for some time. This site is now relatively well-controlled and out of use but its past usage does point out the difficulties in a municipal waste management system without adequate enforcement by-laws.

Waste Disposal

The contractor previously disposed of the collected wastes at a municipal site in Cumberland Township. This site has recently become unavailable to the contractor and he has been hauling to the City of Ottawa's Ridge Road landfill site. It is not

economically feasible to continue this procedure as the round trip from Rockland to the site is approximately fifty miles. Furthermore, the Ottawa site will be closed January, 1976, at which time a new regional site will be placed into operation. The new site selected is in Nepean Township and will undoubtedly represent an economic impossibility as a disposal site for Rockland.

There have recently been discussions with neighbouring Clarence Township on the feasibility of using the Township site, and there are chances that a new separate site will be developed. In any event, we cannot stress too strongly the necessity of providing a site of reasonably close proximity to the Town in order to minimize haulage costs and perhaps more importantly, to provide an accessible disposal area to local residents.

Our staff have recently investigated a disposal site located at the end of Notre Dame Street in Rockland. The site consists of a marsh area, and was in fact begun in order to eventually fill the area in and reclaim it for municipal purposes, probably as recreational land. The site is in full view of highway 17 and does not otherwise meet provincial regulations. The site hasn't received provincial approval and while it is the Town's stated intention to dispose only of non-putrescible material such as building debris, branches, scrap metal, and tires at this site, several inspections have led us to conclude that it would be impossible to control the usage of this site to prevent the deposit of domestic waste. We will therefore not be issuing any approval certificate for this site and must insist that its usage be terminated and the present wastes covered.

System Adequacy

The extent of indiscriminate dumping in Rockland has reached severe proportions. The necessity of providing an accessible disposal site has been referred to already. If such a site cannot be obtained, the Town will have to expand its arrangements for waste collection so that citizens will not be disposed to get rid of wastes within the municipal boundaries. The collection contract should provide for more frequent collection of routine wastes, as well as the collection of larger, bulkier debris, perhaps on a bi-weekly basis. The Town might consider the establishment of collection points to facilitate pick-up of the larger material. The program will need legal force through clear and well-enforced municipal waste control by-laws. These should be enacted as soon as possible.

The Town might also well consider it within its scope of civic responsibility to do something about the existing piles of garbage scattered throughout. There is existing statutory authorization under the Municipal Act for a municipality to carry out a clean up program of this nature.

Recommendations

1. By-laws prohibiting the dumping or storing of wastes within the municipal boundaries should be enacted.
2. A suitable disposal site should be developed. The site should preferably be accessible to Rockland residents.
3. The site at the end of Notre Dame Street should be closed off. The wastes presently on site should be covered.
4. The frequency of waste collection should be revised.

5. Consideration should be given to the carrying out of a clean-up program to rid the Town of existing scattered piles of wastes.

H. WATER POLLUTION SURVEY

Results and Interpretation

Water samples were collected at various sites throughout the Town and analysed for bacterial and chemical contaminants. The sampling points are indicated on the map accompanying this report. The results are tabulated in table H.1.

Point 101 is from a storm sewer discharging to an open ditch located east of the municipal hall, adjacent to the parking area. It is the outlet for a storm sewer system that has two branches: one running along Laurier Street from a point just west of Giroux Street and ending on Laurier south of the storm outlet, the other beginning on Giroux, running along Martin Street, following Avenue du Parc, cutting across Parc Simon, and then northerly to meet the first branch on Laurier. The two sewers drain areas that are served by sanitary sewers. The chemical and bacterial results indicate excessive levels of pollution, principally of human origin. The ditch is contaminated from point 101 to point 105 - B and the levels are such that a reasonable conclusion is that the ditch constitutes a significant health hazard. During the sampling survey, a number of citizens complained of odours and foam in the ditch (the chemical samples submitted were not analysed for MBAS due to lack of adequate testing equipment at our Kingston labs). As this is a sewered area, it appears that some homes are not properly connected to the sanitary services and are presumably still using septic tanks. The lot sizes in this area are not adequate for subsurface disposal of wastewaters. A thorough review of the actual number of services in this drainage area should be carried out with a view to ascertaining the number of homes still on septic tanks. If

TABLE H. 1
TOWN OF ROCKLAND
Water Pollution Survey - 1975
Bacterial and Chemical Results

<u>Date</u>	<u>Location</u>	<u>Total coliforms</u>	<u>Fecal coliforms</u>	<u>Fecal streptococcus</u>	<u>BOD</u>	<u>Suspended solids</u>
June 2	101: storm sewer discharging to a ditch east of the municipal hall	8,000+	800+	—	150	110
June 16	101: "	500,000,000	750,000	400	—	—
June 16	101-B: ditch flowing in a west- erly direction, down- stream from pt. 101	2,800	84	500	—	—
June 16	105-B: ditch flowing in a west- erly direction, down- stream from pt. 101-B, on Edwards Street	5,200,000	13,000	160	28	<15
	105-C: drainage pipe discharging to ditch, from Edwards St.	76,000,000	3,100,000	277,000	—	—
June 2	102: ditch at a point west of Lalonde Street and north of Laurier	8,000+	800+	—	290	740
June 16	102: "	151,000,000	4,220,000	12,600	—	—
June 2	103: storm drain on St. Jacques St.	1,900	910	—	4	< 15
June 16	103: "	298	8	44	—	—
June 2	104: storm sewer discharge on St. Jean Street	3,200	300	—	—	—

<u>Date</u>	<u>Location</u>	<u>Total coliforms</u>	<u>Fecal coliforms</u>	<u>Fecal streptococcus</u>	<u>BOD</u>	<u>Suspended solids</u>
June 16	104-A: pipe discharging in vicinity of 104, from western side	9,300	970	10	—	—
June 16	104-B: outfall from St. Jean St.	444	160	24	—	—
June 2	105: ditch north of Highway 17, at light intersection	8,000+	800+	—	170	920
June 16	105: "	6,000,000	800,000	32,000	—	—
June 16	109a: Edward St. ditch, 50' north of road culvert	25,000,000	550,000	93,000	—	—
June 16	109b: Edward St. ditch, 50' south of road culvert	3,100	160	320	—	—
June 2	106: Laurier Ave. behind car wash	3,900	460	—	—	—
June 16	110a: ditch south of Laurier, running in a westerly direction, at Lawrence St.	30,000,000	1,300,000	43,000	—	—
June 16	110b: ditch running in an east- erly direction, at Lawrence Street	680	180	710	26	< 15
June 16	111a: ditch running in an east- erly direction, at Notre Dame Street	>150,000,000	4,700,000	200	60	< 15
	111c: pipe leading to 111a	344	52	92	50	< 15
	111b: ditch sampled at Notre Dame Street south	620	30	690	—	—
	112b: ditch at Caron Street	4,200,000	210,000	670	130	25
June 2	108: ditch emptying at golf course	8,000+	800+	—	30	220

<u>Date</u>	<u>Location</u>	<u>Total coliforms</u>	<u>Fecal coliforms</u>	<u>Fecal streptococcus</u>	<u>BOD</u>	<u>Suspended solids</u>
June 16	108: ditch emptying at golf course	750,000	329,000	830	—	—
	112a: ditch along Caron Street	4,400	1,500	160	—	—
June 2	107: ditch emptying at golf course (northern branch)	8,000+	800+	—	—	—
June 16	107: "	24,000	410	1130	—	—
	107b: 107 ditch at Laurier	79,000	3,700	980	—	—
	107c: 107 ditch at Chapman	3,600	250	1710	—	—

the number is significant, the health unit should be requested to investigate the unconnected homes or the municipality should pass a by-law compelling homeowners to hook up to the sanitary services. If the number of unconnected homes in the area is quite low, the sanitary sewer should be checked for leaks by dye-testing. This procedure was discussed with Mr. Laviolette, the Town Superintendent of Works.

Sample 105 - C was collected from a pipe extending along Edward Street an undetermined length. The results are indicative of extreme levels of pollution. The area along Edward Street from highway 17 to Laurier Street, including Wallace, Albert, and Victoria. The problems along here have been recognized for a long while but because of the predominant rock outcrop, sanitary servicing was delayed to a later phase of the provincial sewer project. The present results confirm that servicing of this area should be allotted a very high priority as it is clear that this section is totally unsuitable for septic tank usage.

Sample result number 102 is from a ditch flowing in a northerly direction from a point west of Lalonde Street, and emptying to the same tributary which receives the contaminated waters discussed above. The ditch drains a storm sewer area extending along Lalonde and Albert Street almost to St. Louis Street, and from another branch running along Marion Street from St. Jacques. The northern branch services a section which has no sanitary sewers. The assumption we make is that most of the high bacterial load originates in this branch, though we recognize the possible usefulness of samples collected in the two individual lines, particularly in view of the very high results obtained along Laurier and Martin Streets. The municipality should check both lines and effect the proper corrective measures, whether it be the passing of connection by-laws or the disconnecting of polluting drains from the municipal storm sewer system. Our survey team

received three separate fully justified complaints of odours concerning this ditch.

It should be noted that the polluted waters discussed so far all discharge to the Ottawa River at a point upstream of the water treatment plant intake. While there is no information available as to current flows along the shore, it is quite conceivable that under some particular weather conditions, these polluted waters would affect the quality of the raw water taken at the plant. The levels of disinfection maintained through chlorination in the water treatment plant are fully adequate to eliminate any danger of bacterial contamination of the water distribution system but the present situation nevertheless remains unsatisfactory and should be corrected by the municipality.

The results at point 103 are low because the storm sewer on St. Jacques Street is relatively new, and the area is properly serviced by sanitary sewers. A fairly anomalous observation of toilet tissue in the receiving ditch was attributed to a sanitary sewer blockage which had occurred approximately two weeks prior to the survey and resulted in basement flooding. Basement sumps had presumably carried the waste to the storm sewer. Mr. Laviolette was to investigate this matter and report to us at a later date. The results showed that the incident was neither continuous nor particularly serious from the point of view of water pollution.

Sample 105 is another instance of excessive pollution. The counts reflect the difficulties encountered in unserviced areas, Catherine and Edward being notable instances of streets which represent clear health hazards. There is evidence of raw sewage directly in the ditch, and reportedly, the odours from this section are quite vile at times. In the case of points 109 a

and 109 b, it is evident from the street which houses are discharging sewage as waste material is present on two or three pipes. There are really only three possible homes from which this level of pollution could emanate and the health unit should investigate their treatment methods.

The samples 108, 110, 111, 112 fall in the same category as many of the previous readings. They indicate a severe level of contamination and confirm that a health hazard exists in the Town. The municipality should do everything possible to expedite the completion of the sewage system, and should ensure that individual sources of pollution are corrected. The 107 series is not as bad; the high fecal streptococcus readings suggest that the major source of contamination is animal wastes from the wooded area through which the ditch runs.

The results show an unacceptable level of water contamination. The correction of pollution sources originating within its boundaries is a municipality's responsibility and is not sufficient for the municipality to simply await the eventual installation of sanitary sewers. The Ontario Water Resources Act makes it illegal for a municipality to discharge polluting material to waterways through storm sewers. In a large number of instances of water pollution within Rockland, the least amount of municipal initiative would have probably ensured some degree of compliance by the offending homeowners to health and environmental regulations.

Recommendations

1. The municipality should halt the discharge of raw sewage to storm sewers and other drainage works. The health unit should be called in to help arrange remedial measures.

2. Several storm systems should be investigated because of the high pollution loads. These are indicated in the report.
3. Municipal by-laws compelling homeowners to connect to the sanitary system should be considered.
4. The completion of the sewage system should be expedited.

I. CONCLUSIONS

The municipal servicing study carried out in the Town of Rockland has led to the following conclusions:

1. The water treatment plant occasionally operates above its design capacity, largely because of excessive water usages and deficiencies in the distribution system. The water treatment plant capacity should be increased unless a serious program of water conservation is undertaken.
2. The sewage treatment lagoon is operating well and is adequate for present needs. It will require expansion when the sanitary services are extended to cover the remainder of the municipality.
3. The waste management program is lacking in several respects. Controlling by-laws, adequate disposal facilities, and possibly an improved schedule of waste collection are necessary.
4. There is an unacceptable level of water pollution in the Town. In some instances, the pollution constitutes a public health hazard.



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